

Stage 2—3 Counting All

Proportions and Ratios

I know doubles to 10.
I know halves to 10.
I can read $\frac{1}{2}$ and $\frac{1}{4}$

I can fair share a set using materials.

e.g. Share 6 marbles between 2 people.



I can find halves and quarters of shapes and objects.

e.g. Share the licorice strap between you and your friend.



Stage 4 Advanced Counting

Proportions & Ratios

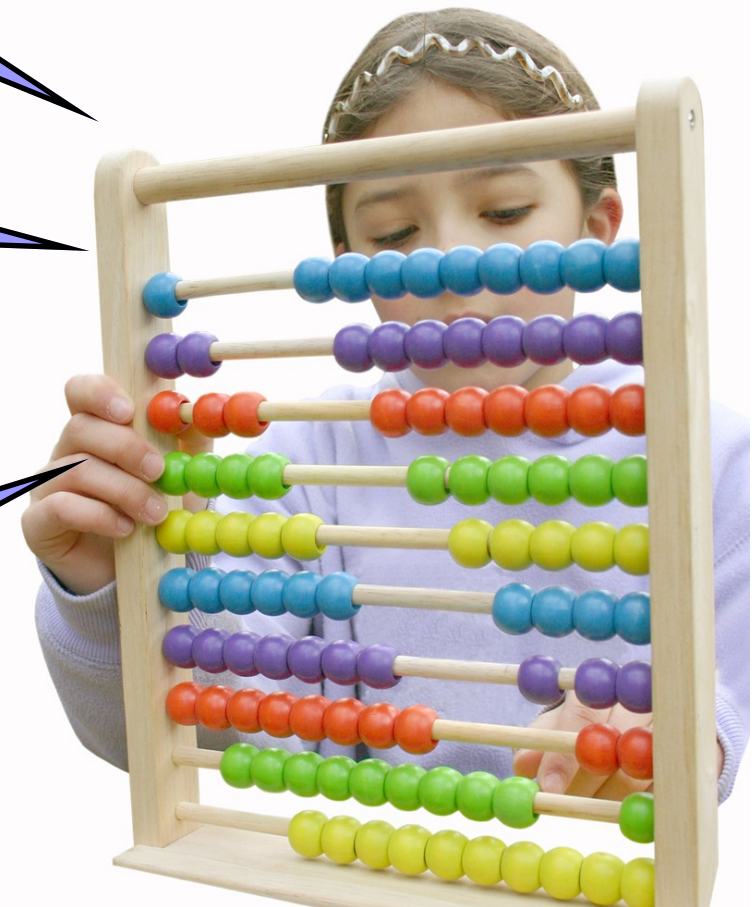
I can find a fraction of a set by equal sharing. I can use skip counting, known doubles or halves to help solve problems.

I can read $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$

I know doubles to 20 and matching halves to 20.

I can share a shape into equal parts for halves, quarters, thirds and fifths.

I can find fraction of a shape or object using symmetry to create halves, quarters and eighths.



Stage 5 Early Additive

Proportions & Ratios

I can find fraction of a number using halving, known addition facts or some simple multiplication facts.

e.g. $\frac{1}{3}$ of 12 is 4 because $3 + 3 + 3 = 9$ so $4 + 4 + 4 = 12$

I can solve division problems with remainders using halving, known addition facts or some simple multiplication facts.

e.g. 7 pies shared with 4 people ($7 \div 4$) by giving each person 1 pie, and $\frac{1}{2}$ pie, then $\frac{1}{4}$ pie

I know the symbols for halves, thirds, quarters, fifths and tenths.

I can order fractions with the same denominators, e.g. $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$

I know the symbols for improper fractions.



Stage 6 Advanced Additive

Proportions & Ratios

I use repeated halving or known multiplication and division facts to solve problems that involve...

Finding fractions of a set or region.

e.g. $\frac{3}{4}$ of 24, $\frac{1}{2}$ of 24 = 12,
 $\frac{1}{2}$ of 12 = 6 so $3 \times 6 = 18$

Division with remainders

8 pies shared with 3 people by giving each person 2 pies and dividing the remaining 2 pies into thirds.
 $2 + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 2 \frac{2}{3}$

I use repeated copying to solve simple problems involving ratios and rates.

e.g. $2:3 \rightarrow 4:6 \rightarrow 8:12$



Renaming improper fractions

e.g. $\frac{16}{3} = 5 \frac{1}{3}$ (using $5 \times 3 = 15$)

Stage 7 Advanced Multiplicative

Proportions & Ratios

I can use a range of multiplication and division strategies to estimate and solve problems with fractions, proportions, and ratios.

I can find equivalent fractions and rename common fractions as decimals and percentages.

$$\text{e.g. } \frac{3}{4} = 75/100 = 75\% = 0.75$$

Fraction example;

Sam is 16 and is $\frac{2}{3}$'s of my age.
How old am I?
 $\frac{1}{3}$ is 8 so $3 \times 8 = 24$

Ratio example;

$3:5$ as $\square:40$, $8 \times 5 = 40$,
 $8 \times 3 = 24$, so $\square = 24$

Fractional answers using division example;

13 pies to share with 5 people.
 $13 \div 5 = (10 \div 5) + (3 \div 5) = 2 \frac{2}{5}$

Percentages example;

I got $\frac{24}{50}$ goals and Sera got $\frac{18}{20}$.
Who was the better shot?

$\frac{36}{50} = 2 \times \frac{36}{50}$ so 72%, while $\frac{16}{20} = \frac{4}{5}$
so $4 \times 20 = 80\%$



I can choose appropriately from a range of mental strategies to estimate and solve problems involving fractions, proportions and ratios. I can use strategies that involve common factors, unit fractions, decimals, percentages, finding relationships between and within ratios and rates.



65% of \$24 = \square
50% is 12, 10% is 2.4 so 5% is 1.2,
 $\$12 + \$3.60 = \$15.60$

It takes 10 balls of wool to make 15 beanies. How many balls of wool does it take to make 6 beanies?

$10 \rightarrow 15$ so $1 \rightarrow 1.5$ so $4 \rightarrow 6$ (unit fractions),
or $6 \times 2\frac{1}{2} = 15$ so $\square \times 2\frac{1}{2} = 10$ (relationships within the same unit)

I can solve problems like this;

A computer technician charges \$60 an hour, plus GST. GST is 12.5% of the total bill. If the technician comes for 2 hours, how much will he charge in total?